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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,969	03/31/2004	Jean-Michel Franchet	251003US41	4877

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C. IRVIN MCCLELLAND
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
EDMONDSON, LYNNE RENEE	
ART UNIT	**PAPER NUMBER**
1725	

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,969	FRANCHET ET AL.	
	Examiner	Art Unit	
	Lynne Edmondson	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4-6, 8, 9, 11 and 14 are rejected under 35 U.S.C. 102(a) as being anticipated by Buldhaupt et al. (USPN 6419146 B1).

Buldhaupt teaches a method of fabricating a hollow party by diffusion welding and superplastic forming by providing multiple sheets of a superplastic material, providing an anti-diffusion (stop-off) substance in a pattern which is locally sintered by laser, assembly the parts into a stack, defining a cavity, diffusion welding the stack, placing the welded assembly into a mold and superplastically forming a blank (figures 2, 6A, col 4 line 43 – col 6 line 22, col 7 lines 40-66 and col 8 line 33 – col 9 line 19). The anti-diffusion material comprises boron nitride which is mixed with water and sprayed. Excess is removed (col 5 lines 24-42). The laser is moved in a predetermined path by a computer-controlled (CNC) drive system in the presence of argon (col 5 lines 40-54).

3. Claims 1, 2, 4-6, 11 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Will et al. (USPN 6138898).

Will teaches a method of fabricating a hollow party by diffusion welding and superplastic forming by providing multiple sheets of a superplastic material, providing an anti-diffusion (stop-off) substance in a pattern which is locally sintered by laser in the presence of argon, assembly the parts into a stack, defining a cavity, diffusion welding the stack, placing the welded assembly into a mold and superplastically forming a blank (figures 2, 4, 6D, col 5 lines 1-48, col 6 lines 15-48 and col 7 line 1 – col 8 line 38). The anti-diffusion material comprises boron nitride which is mixed with water and sprayed. Excess is removed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 7, 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buldhaupt et al. (USPN 6419146 B1).

Buldhaupt teaches a method of fabricating a hollow party by diffusion welding and superplastic forming by providing multiple sheets of a superplastic material, providing an anti-diffusion (stop-off) substance in a pattern which is locally sintered by laser, assembly the parts into a stack, defining a cavity, diffusion welding the stack, placing the welded assembly into a mold and superplastically forming a blank (figures 2, 6A, col 4 line 43 – col 6 line 22, col 7 lines 40-66 and col 8 line 33 – col 9 line 19). The

anti-diffusion material comprises boron nitride which is mixed with water and sprayed. Excess is removed (col 5 lines 24-42). The laser is moved in a predetermined path by a computer-controlled (CNC) drive system in the presence of argon (col 5 lines 40-54). However there is no disclosure of washing or brushing to remove excess material.

It would have been obvious to one of ordinary skill in the art at the time of the invention to wash away excess boron nitride as in the previous washing step to facilitate rapid formation of a strong, reliable diffusion bond (Buldhaupt, col 5 lines 4-23). Brushing is an obvious variation of washing and would provide a simple and economical way to remove excess material.

6. Claims 3, 10, 12, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buldhaupt et al. (USPN 6419146 B1) in view of Sanders (US 2002/0179688 A1) and Weisert et al. (USPN 4220276).

Buldhaupt teaches a method of fabricating a hollow party by diffusion welding and superplastic forming by providing multiple sheets of a superplastic material, providing an anti-diffusion (stop-off) substance in a pattern which is locally sintered by laser, assembly the parts into a stack, defining a cavity, diffusion welding the stack, placing the welded assembly into a mold and superplastically forming a blank (figures 2, 6A, col 4 line 43 – col 6 line 22, col 7 lines 40-66 and col 8 line 33 – col 9 line 19). The anti-diffusion material comprises boron nitride which is mixed with water and sprayed. Excess is removed (col 5 lines 24-42). The laser is moved in a predetermined path by a computer-controlled (CNC) drive system in the presence of argon (col 5 lines 40-54).

However there is no disclosure of yttria , of forming a turbine blade or of brushing away excess material.

Sanders teaches BN and yttria (paragraph 31) as alternative anti-diffusion materials in a conventional diffusion bonding, superplastic forming process (paragraphs 31-37) used to form turbine blades (paragraph 42).

Weisert teaches a yttria anti-diffusion material having a particle size of approximately 10 microns (abstract and claim 8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ small diameter yttria as an obvious alternative to BN which will prevent diffusion but not react and that this method is conventional for forming aerospace structures and turbine blades which would typically be used in vibrating or fatigue environments (Buldhaupt, col 1 lines 21-45). Brushing would provide a simple and economical way to remove excess material.

Response to Arguments

7. Regarding applicant's argument that Buldhaupt teaches away from sintering the stop-off, it is noted that the passage (col 5 lines 35-39) teaches that stop-off is carefully excluded from areas to be diffusion bonded which is to be expected since the stop-off serves as an anti-diffusion substance. There is no teaching that the stop-off is kept away from the laser. Lines 40-54 of that same column teach applying the laser to the coated sheet (coated with stop-off) in a predetermined pattern.

Therefore the 102 rejection of claims 1, 2, 4-6, 8 and 9 as anticipated by Buldhaupt stands and includes new claims 11 and 14.

Therefore the 103 rejection of claim 7 as obvious over Buldhaupt stands and includes new claims 12 and 15.

8. Regarding applicant's argument that Will teaches away from sintering the stop-off, it is noted that the passage teaches that stop-off is applied only in zones where there will be no *diffusion* bonding which is to be expected since the stop-off serves as an anti-diffusion substance. There is no teaching that the stop-off is kept away from the laser. Col 6 lines 15-48 teach coating the entire sheet and welding through it in intersecting T-patterns shown in figure 2 and 4. As the entire sheet is coated, if no bonding occurred, the sheets would not be joined at all. However the figures show bonded intersections, 98.

Therefore the 102 rejection of claims 1, 2 and 4-6 as anticipated by Will stands and includes new claims 11 and 14.

9. Regarding Sanders and Weisert, it is noted that these are secondary references and not 102 references, further the stop-off is used as claimed and as described in paragraphs 9 and 10 above as a means for stopping a particular type of bonding in a particular area rather than preventing all types of bonding in the sheet. Sintering of the stop-off with a laser is taught in the primary references as discussed above.

Therefore the 103 rejection of claims 3 and 10 as obvious over Buldhaupt in view of Sanders and Weisert stands and includes new claims 12, 13 and 15.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kistner et al. (UUSPN 6810572 B2, laser sintering stop-off), Douglas (USPN 5263638, laser, turbine blade), Motherwell (USPN 6979180 B2, yttria, turbine blade), Fowler (USPN 6068179, laser seals edge, evaporate stop-off) and Stacher (USPN 5118026, vaporize stop-off).

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (571) 272-1172. The examiner can normally be reached on Monday through Thursday from 6:30 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lynne Edmondson
Primary Examiner
Art Unit 1725

LRE 9/7/06